REMARKS/ARGUMENTS

In the Office Action, the Examiner rejected claims 1, 3, 5 and 7 under 35 U.S.C § 102 (a) as being anticipated by Horio et al., JP2003-037302. Reconsideration of the rejection is respectfully requested.

However, claims 1 and 3 have been amended to add a clause providing that "wherein when the raw alloy in molten form is contacted with a surface of a cooling member so as to form the plate shaped raw thermoelectric semiconductor materials, a rotational roll is used as the cooling member and is rotated so that the circumferential velocity of the rotational roll is less than 2m/sec". Antecedent basis for this amendment to claims 1 and 3 is in the specification for example, on page 30, line 26, to page 31, line 9.

Claims 1 and 3 provide that set the rotational roll is rotated so that the circumferential velocity is no higher than 2m/sec. The specified circumferential velocity of the rotational roll makes it possible to solidify the molten alloy so as to form fine crystal grains only in the surface region on the side of the shaped raw thermoelectric semiconductor materials corresponding to the contact surface between the molten alloy and the rotational roll. Furthermore, large crystal grains oriented in the direction of the plate thickness are formed throughout the entire thickness of the plate shaped raw thermoelectric semiconductor materials in the region in the direction of the plate thickness other than in the surface region having fine crystal grains, (see specification, page 31, lines 9-24; page 33, lines 6-14).

Furthermore, as specified in claim 3, excess Te is added to the stoichiometric composition to form a raw alloy. When this excess Te is added, Te rich phases including excess

Te in the composition of Bi_2Te_3 or Bi_2Se_3 can be microscopically dispersed as a non-amorphous separated phase in crystal grains and in grain boundaries of the respective complex compound semiconductor phases of Bi_2Te_3 and Bi_2Se_3. Thus, a raw thermoelectric semiconductor material that is thought to have a structure dispersing a microscopic Te-rich phase can be achieved. That is, a structure having crystals formed by precipitation of hetero phase (Te-rich phase) or by nucleation of hetero phase nuclei within the crystal grains and grain boundaries of the $Bi_2(Te-Se)_3$ based complex compound semiconductor can be achieved, (see specification, page 32, lines 17-26).

Moreover, the specified circumferential velocity of the rotational roll can make it possible to manufacture the raw thermoelectric semiconductor materials having grater width and thickness. Accordingly, since the volume of each piece of raw thermoelectric semiconductor material can be increased, the specific surface area of the piece of raw thermoelectric semiconductor material can be reduced. That is, since oxidation of the raw thermoelectric semiconductor materials can be restricted, it is possible to prevent lowering of the electric conductivity (σ) due to oxidation, (see specification, page 41, line 19, to page 42, line 17).

Hirio et al. does not appear to disclose, teach or suggest the features of claims 1 and 3, as amended, and therefore cannot realize the above-mentioned advantages of the plate shaped raw thermoelectric semiconductor materials manufactured as specified in claims 1 and 3.

Since each of claims 5 and 7 is directly dependent on independent claim 3, each of claims 5 and 7 is allowable for at least the same reason recited above with respect to the allowability of independent claim 3.

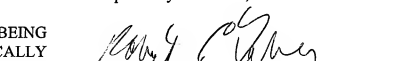
The Examiner rejected claims 8 to 15 under 35 U.S.C. §103(a) as being unpatentable over Fukuda et al., U.S. Patent No. 6,274,802 in view of Horio et al. Reconsideration of the rejection is respectfully requested.

Independent claims 8 and 12 have been amended to provide for the same feature added to independent claims 1 and 3 quoted above. Fukuda et al. does not appear to teach, disclose or suggest the features of claims 8 and 12 added thereto which are the same as the features added to claims 1 and 3. Therefore, it does not appear to be possible for either Horio et al. or for Fukuda et al. either singly or in combination to realize the advantages of the plate shaped raw thermoelectric semiconductor materials manufactured by the method specified in independent claims 8 and 12.

Since each of claims 9-11 and 13-15 is directly or indirectly dependent upon one of independent claims 8 and 12, each of claims 9-11 and 13-15 is allowable for at least the same reasons recited above with respect to the allowability of the appropriate one of independent claims 8 and 12.

In view of the foregoing amendments and remarks, allowance of claims 1, 3, 5 and 7-15 is respectfully requested, claims 2, 4, 6 and 16-116 having been withdrawn from consideration.

Respectfully submitted,



Robert C. Faber
Registration No.:24,322
OSTROLENK FABER LLP
1180 Avenue of the Americas
New York, New York 10036-8403
Telephone: (212) 382-0700

THIS CORRESPONDENCE IS BEING SUBMITTED ELECTRONICALLY THROUGH THE PATENT AND TRADEMARK OFFICE EFS FILING SYSTEM ON JULY 1, 2010.

RCF:mw:fs